

STAR Status and what we'd like to see near term

- We'd run our relatively complex suite of spin triggers almost a week ago, and observed that the “machinery” was ready to go.
 - In looking at the data taken with this mix of Spin trigger (High Towers and Jet Patches, some unwanted Phi asymmetries, we believe associated with backgrounds were observed. With the constantly changing Collider conditions, we put off further investigation until things settled down. We're looking into this again now.
- A goal for the last week has been checking that we understand our local polarimeter results to the extent that we felt we could help the collider efforts, without adding confusion. This ultimately looks to have paid off.
 - We also tried to get some of our min-bias data set goal done. We haven't made much progress on this, due to limited time at store with conditions where we could take data.
- As of Tuesday morning, we started running our suite of Spin triggers again. Things generally look very good, and we're pushing to lock down some of the Trigger components ASAP for starting to accumulate Physics data.
- STAR would like to see near term collider development perfect the combined Energy and Rotator ramps, as we will be almost exclusively after longitudinally polarized collisions.
 - At some point, we will want to take a store of Transversely polarized collisions, to correlate our local polarimeters with the CNI polarimeters.
- To meet our integrated luminosity goals, we'll be after fairly significant luminosity improvements, high polarizations, and time at store for data accumulation.

Approximate picture of what STAR needs to complete BUR goals

Minimum Conditions for Physics

- 1.) A store averaged luminosity of $4 \times 10^{30} \text{ cm}^{-2} \text{ s}^{-1}$ (BBC rate of $\sim 110 \text{ kHz}$) or higher.
- 2.) Store averaged polarizations of 35% * or better for both beams.
- 3.) The confirmation, as determined by the local STAR polarimeter, that the polarization directions for the beams are no more than 20 degrees off of the beam axis.
- 4.) Reproducible stores.

** CNI Polarimeter data/measurements must be understood and reliable.*

BUR Goals:

- 1.) Sample $\sim 7 \text{ pb}^{-1}$ of Long. Polarized collisions. Running $\sim 50\%$ dead, this requires about 14 pb^{-1} delivered *that we can use*.
- 2.) Sample $\sim 4 \text{ pb}^{-1}$ of transversely polarized beam. Running $\sim 50\%$ dead, this requires about 8 pb^{-1} delivered *that we can use*.
- 3.) Collect $\sim 20 \text{ Mevts}$ of min-bias. This takes about 70 hours of data taking.

Under assumption that we are taking data for 8 hrs/day (56 hrs/week), to get $\sim 2 \text{ pb}^{-1}/\text{week}$ that we can use, requires an average luminosity of $\sim 1 \times 10^{31} \text{ cm}^{-2} \text{ s}^{-1}$.

Goals assume an average polarization for both beams of 40%.

Issue of cogging the Beams, and possible Filled Bunch patterns

- In terms of the overall cogging of the beams, STAR would like to stay with the agreement reached last Friday, that the cogging will be with abort gaps at 4 and 10 o'clock.
 - Why was this changed last night? Was it somehow authorized?
- To further answer W. Fischer's question from this morning "What do you want" as bunches are likely added in the future:
 - The present abort gaps, with the present filled bunch pattern, give us ~ 4 filled on empty "crossings" in both directions. This is sufficient to satisfy our needs regarding systematic issues.
 - As bunches are added to the fill pattern, we'd like them added into locations so that they collide with filled bunches at STAR.

On the issue of the High Energy Beam Development

- STAR places an extremely high priority on getting a sufficient data set to make a measurement of the gluon polarization out of the current run.
- STAR recognizes and appreciates the importance of doing collider development for the future.
- STAR would like to have 2 to 3 pb⁻¹ recorded luminosity (this means 4 to 6 pb⁻¹ delivered), with “good” polarization (> 35% in each beam), before RHIC efforts are diverted to this development effort.
- If this can't be achieved prior to the Collider Physicists leaving for their Conference, perhaps early June, after their return, would be possible.